REMARKS

Claims 1-11 are all the claims pending in the application. Claim 8 has been withdrawn from consideration by the Examiner. New claims 9-11 have been added. Reconsideration and allowance of all the claims are respectfully requested in view of the following remarks.

Election/Restriction

The Examiner has, under 37 C.F.R. § 1.142(b), withdrawn claim 8 from further consideration as being drawn to a non-elected species. New claims 9-11 respectively depend from claims 1, 5, 6, and are directed to the species as shown in Fig. 1. Accordingly, new claims 9-11 should be examined with the elected species.

Drawings

The Examiner objected to the drawings as not showing every feature of the invention as set forth in the claims. Specifically, the Examiner asserted that the operating means provided in the injection nozzle, as recited in claims 1, 5, and 6, must be shown of the features canceled from the claims. In response, Applicants have submitted a new drawing figure based on Fig. 1, but showing the valve 19 as being inside the nozzle 2. Please see the new drawing Fig. 4 attached hereto.

Claim Objections

The Examiner objected to claim 2 as including informalities. Specifically, the Examiner suggested that on line 16, the second occurrence of "the" should be deleted. Applicants have followed the Examiner's suggestion.

Claim Rejections - 35 U.S.C. § 112

The Examiner rejected claims 1-7 under §112, 2nd paragraph, as indefinite.

Specifically, the Examiner asserted that "vicinity" and "proper position" are indefinite terms. Applicants have amended these terms to --in communication-- and --position-- respectively.

Further, the Examiner asserted that in claim 2, the "flow detecting means" appears to be a double inclusion of the "detecting means" as recited in claim 1. Applicants have amended claim 2 so as to further define the "detecting means" as set forth in claim 1.

Claim Rejections - 35 U.S.C. § 102

- The Examiner rejected claims 1 and 5 under §102(e) as being anticipated by US Patent 6,270,020 to Thompson et al. (hereinafter Thompson). Applicants respectfully traverse this rejection because Thompson fails to disclose every element as set forth and arranged in the claims.

Claims 1 and 5 independently set forth a cleaning and releasing device comprising: an injection nozzle; operating means for supplying and stopping a pressurized liquid to the injection nozzle; and detecting means for detecting supply and stop of the pressurized liquid generated by operation of the operating means, wherein the supply and stop of a pressurized gas to the injection nozzle is controlled based on a result of the detection by the detection means.

For example, as shown in Fig. 1, one embodiment consistent with that set forth in claims 1 and 5 is a cleaning and releasing device comprising: an injection nozzle 2; operating means 19 for supplying and stopping a pressurized liquid to the injection nozzle; and detecting means 20 for detecting supply and stop of the pressurized liquid generated by operation of the operating means, wherein the supply and stop of a pressurized gas to the injection nozzle is controlled based on a result of the detection by the detection means 20. For example, detection means 20 sends a signal to controller 13 which then controls the switch valve 5 so as to control the supply of pressurized gas 3. With such an arrangement, the supply of pressurized gas 3 can be controlled together with control of the pressurized liquid via valve 19, thereby reducing the number of operation means such as valves, simplifying the structure of the injection nozzle

portion, or decreasing weight. See, for example, the specification at: page 2, lines 11-25; page 4, paragraph [0004]; page 10, lines 2-11; page 15, lines 1-10; and pages 16-17, paragraph [0014].

In contrast to that set forth in each of claims 1 and 5, Thompson discloses separate control of the valves for pressurized gas, and pressurized liquid. That is, Thompson discloses a controller 34 that controls valve V4 to distribute liquid deicer from nozzles 18, upon a dispense command. See, for example, col. 2, lines 46-53, and col. 3, lines 46-57. Separately, based on the pressure as detected by pressure switch S1, the controller 34 controls the flow of pressurized gas from nitrogen tank 16 to pressure tank 14 via valve V3. See, for example, col. 2, lines 8-16, and col. 3, lines 36-45. Accordingly, Thompson's supply and stop of pressurized gas from tank 16 is not controlled based on a result of the supply and stop of the pressurized liquid as detected by a detecting means, as is independently set forth in claims 1 and 5.

Further, the Examiner's interpretation of Thompson is mistaken. The Examiner asserts that Thompson discloses an operating means 28. But element 28 is a regulator that controls the flow of gas from nitrogen tank 16 to pressure tank 14[1]; it does not control the flow of pressurized liquid to an injection nozzle, as does the presently claimed operating means set forth in claims 1 and 5. Instead, it is Thompson's valve V4 that controls the flow of pressurized liquid from tank 14 to nozzles 18. But again, detection of the operation of valve V4 does not then also control the flow of pressurized gas.

For at least any of the above reasons, Thompson fails to anticipate claims 1 and 5.

- The Examiner rejected claims 1-7 under §102(b) as being anticipated by US Patent 5,312,040 to Woodward (hereinafter Woodward). Applicants respectfully traverse this rejection because Woodward fails to disclose every element as set forth and arranged in the claims.

Claims 1 and 5, independently set forth a cleaning and releasing device comprising: an injection nozzle; and operating means for supplying and stopping a pressurized liquid to the injection nozzle. Because the "operating means" is set forth as a function without recitation of

[1] See Thompson at col. 2, lines 8-15.

sufficient structure for performing that function, it is subject to interpretation under §112, 6th paragraph. As set forth in the specification, the operating means is a valve.[2]

The Examiner asserts that Woodward's high pressure pump 36 is an operating means.[3] In contrast to that set forth in claims 1 and 5, and that asserted by the Examiner, however, Woodward's high pressure pump 36 is not a valve—or an equivalent thereto—and, therefore, is not an operating means as presently claimed.

For at least any of the above reasons, Woodward fails to anticipate claims 1 and 5. Likewise, this reference fails to anticipate dependent claims 2-4.

With respect to claim 6, Applicants respectfully traverse this rejection for the following reasons.

Claim 6 sets forth a cleaning and releasing device comprising: a liquid tank for storing liquid; a pump for pressurizing the liquid in the liquid tank to supply pressurized liquid; and an operating portion disposed in an injection nozzle or on a pressurized liquid flow passage to thereby supply and stop the pressurized liquid.

The Examiner asserts that Woodward discloses an "operating means" 36. First, there is no operating means set forth in claim 6. Second, Woodward discloses that element 36 is a high pressure pump, which may correspond to the claim 6 recitation of "a pump for pressurizing the liquid in the liquid tank". But then there is no element in Woodward that corresponds to the operating portion as set forth in claim 6. That is, although trigger 102 may be operated to divert the pressurized liquid flow from nozzle 118 to dump 120, it is not operative to stop the flow of pressurized liquid, as does the claimed operating portion in claim 6.

For at least any of the above reasons, Woodward fails to anticipate claim 6.

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[2] Specification at page 9, lines 15-21, for example.

[3] Office Action at page 4, item 9.

Claim Rejections - 35 U.S.C. § 103

The Examiner rejected claims 2-4 under §103(a) as being unpatentable over Thompson. Because this rejection is based on Thompson, Applicants comments as set forth above are applicable here and, therefore, are incorporated by reference. Further, the Examiner asserts that it would have been obvious to have used a hand valve in place of Thompson's solenoid valve V4. Even assuming that one of ordinary skill in the art were motivated to modify Thompson as suggested by the Examiner, that reference would still not teach or suggest the supply and stop of pressurized gas from tank 16 based on a result of the supply and stop of the pressurized liquid as detected by a detecting means, as is independently set forth in claims 1 and 5. Accordingly, Thompson fails to render obvious Applicants' claims 2-4.

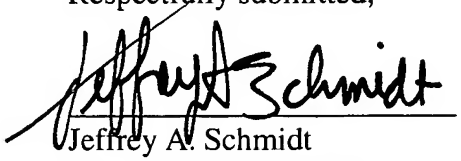
Conclusion

Claims 9-11 have been added to further define the invention. These claims further define the "operating means" or "operating portion" so that the supply and stop of pressurized gas corresponds to the respective supply and stop of pressurized liquid. In Woodward, the relationship is the reverse (high pressure gas is supplied upon the stop of supply of high pressure liquid), and in Thompson, there is no such relationship at all (upon the supply of high pressure liquid, there is no corresponding supply of high pressure gas).

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: March 18, 2004